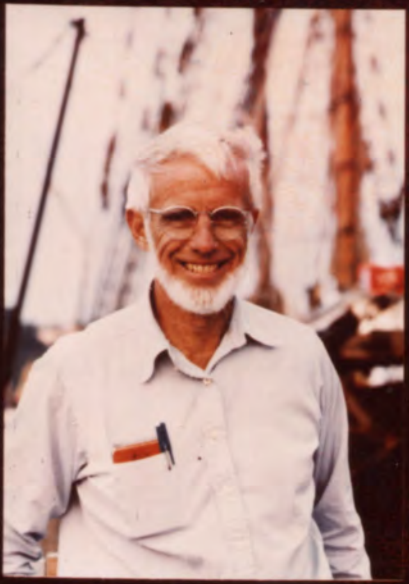
OCEAN RESEARCH AND EDUCATION SOCIETY, INC.



OCEAN RESEARCH AND EDUCATION SOCIETY

Ocean Research and Education Society (O.R.E.S.) was founded in 1975 as a tax-exempt membership society dedicated to promoting conservation of the ocean environment through programs of research and education in ocean ecology. Its primary goals are:

1). to expand knowledge and understanding of the ocean and marine life through continuing research
2). to offer students of marine life an opportunity to study ocean ecological systems while participating in ongoing research at sea, and
3). to develop a well informed constituency of members concerned with the ocean and the problems surrounding the preservation of its resources.

By virtue of scientific study and analysis, which allows an understanding of our environment and its resources, the Society aims to provide some means to develop those resources intelligently.

The Society's first step, some eight years ago, was to design a research program. The primary focus of this program is the population ecology of whales — primarily humpbacks. The size of whales and the fact that, as mammals, they must surface to breathe, make them relatively easy to spot and follow at sea, and thus a good research target. Their position at the top of the food chain means they play a key role in a broad-based ecosystem, which needs to be understood on every level if the ecology of the whale is to be fully comprehended. Whales are also an excellent example of a group of animals brought near extinction by uncontrolled exploitation.

Today the Society continues its research on the population ecology of whales, which includes the collection of oceanographic data. The data collected are shared with a number of other scientific groups via a cooperative arrangement called the Western North Altantic Whale Research Association (of which O.R.E.S. is a founder).

As a part of O.R.E.S. commitment to conduct valuable scientific research, the Society often provides the vehicle for research and study for visiting scientists, who conduct research on such varied topics as the Cat Island Turtle, the Leatherback Turtle of the Dominican Republic, the distribution of shore plant seeds by ocean currents, and the population dynamics of the Bahamian Hutia, a highly endangered endemic (occurring only in the area) rodent.

In addition to the Society's research is an extensive and unusual educational program designed to offer students of marine life a unique opportunity to study marine mammals and ocean ecology while participating in ocean-going research.

Six times a year, the Society offers the Sail and Study semester programs in marine studies. These semester programs are alternative educational programs for college level students interested in the marine world. A full semester of credit (through the University of Massachusetts in Amherst) is available for students enrolled in these 12 week expeditions. Six weeks are spent ashore at the classroom and laboratory in Gloucester, Massachusetts. Course offerings include: Marine Mammal Biology (and Lab), Oceanography (and Lab), Introduction to Nautical Science, and Integrating Marine Seminar (includes the history of oceanography and addresses current marine management questions).

Immediately following the on-shore class work, students sail for six weeks aboard the Society's oceanographic research vessel, REGINA MARIS, on one of her regular working voyages. While on board, students assist the scientists with ongoing research projects, while working with REGINA'S professional crew in all aspects of the ship's operation. Students also complete two field study classes in marine mammal biology and oceanography. Humpback and other whales, as well as sea birds, are used to locate areas of high biological productivity in northern waters during the summer. Studies of these areas examine physical, chemical and biological aspects of the water column as a first step toward understanding the dynamic interrelationships between the various species and their environment.

During the winter, research cruises are held in the West Indies and Caribbean basin, where scientists and students examine coral reefs and ocean habitats characteristic of tropical areas. An annual survey is conducted of Silver Bank, the breeding area of humpback whales north of the Dominican Republic, to identify and count the whales.

The more than 700 students who have participated in the Society's programs have come from 49 of the 50 United States, and several foreign countries including Canada, England, Turkey, Venezuela, and the Phillipines. More than 75 universities and colleges have been represented. While most students are actively enrolled in college when they join the Sail and Study program, about 10%-15% already have an undergraduate degree and come to obtain graduate credits. Nearly 50% of the Society's alumni are women and most minority groups are represented.

Accreditation and transfer transcripts are available currently through the University of Massachusetts in Amherst, and two other universities. Credits may also be available directly from the students own college.

Both the scientific research and the education programs of the Society are intended to explore far-reaching consequences of our interactions with the sea. Contemporary marine issues, the historical roots of today's view of the ocean, and the scientific, technical, political, economic, and personal frontiers that the sea provides are explored.

A third part of the Society's goal is to create a well-informed constituency concerned with the oceans and the problems surrounding the proper utilization of their resources. Interested individuals are invited to become involved in the Society's work by becoming a member, participating in the research expeditions when space is available, attending land-based programs and supporting the Society with voluntary contributions of cash, goods or services.

Members receive two publications. SEARCHLIGHT is a biweekly report drawn from the ship's log which keeps members informed of the scientific work being done on board the REGINA MARIS. O.R.E.S. NEWS is a quarterly newsletter which features educational articles about whale research.

The Society also provides organizations, schools, and citizen groups with a variety of workshops, lectures, and courses on whales. The Society's staff have acted as consultants to various groups in curriculum and research design, and various whale related activites.

The affairs of the Society are guided by a Board of Directors, currently twelve members, that meet four times per year. The members of the Board may be proposed by any Board member, and elected by majority vote. The Board reviews reports, sets policy, and reviews and approves the budget.

The chief operating officer of the Society is the President, currently Dr. George Nichols, who serves without pay. He, with the help of four other board members form the Executive Committee of the Board, which meets monthly to implement Board policies. At present, the departments of Admissions, Education, Science, Ship and Support Staff, have full-time staff leadership.

A Board of Advisors is also available for consultation as needed. These advisors are a group of individuals who have agreed to make themselves available for consultation by the Board, its members, or the President on specific matters of concern related to the research, education or general operation of the Society.

The REGINA MARIS, a 144-foot, three masted wooden barkentine, fills a very critical role in the work of the Society. The continued dependable and safe operation of this ship enables the Society to conduct valuable research, while providing a unique educational forum for approximately 130 students a year.

Launched in 1908 as a three masted schooner, the REGINA MARIS was the 100th hull built by J. Ring Anderson in Svendborg, Denmark. For a number of years, she carried general cargoes around the North Atlantic, and later sailed mostly north European waters delivering the phosphates brought to the Elbe from the Pacific by the great windjammers, before being converted to yacht use in the late 1960's.

O.R.E.S. bought REGINA MARIS in Greece in 1976, and refitted her for oceanographic work in Gloucester, Massachusetts. Since July 1976, she has sailed in the North Atlantic from Greenland to Venezuela and in the eastern Pacific from the Galapagos Islands to southeast Alaska doing research on whales and other marine life.

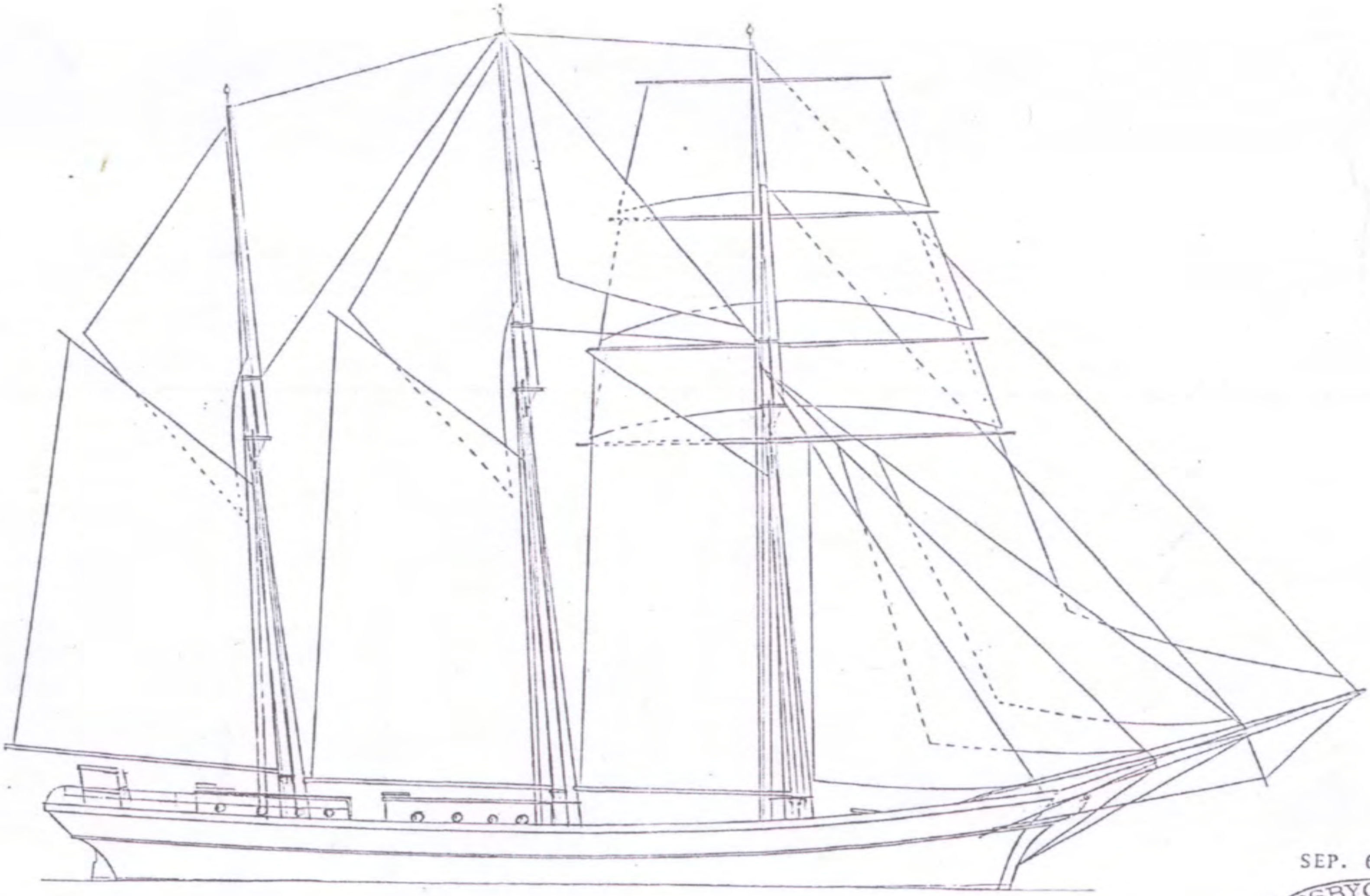
Her tall masts provide ideal platforms from which to spot animals and observe their behavior, while her stability at sea makes her an ideal ship from which to handle nets and other oceanographic gear.

Though the REGINA MARIS has served the Society well, it has become increasingly apparent that the time is approaching when the REGINA must be retired. The age of the ship brings mounting maintenance and insurance costs, and requires costly and extensive inspections every two years to certify seaworthiness.

An understanding of the ocean environment can provide the knowledge and direction to safely develop the resources of and beneath the ocean. By developing such knowledge, O.R.E.S. provides a two-fold service: the collection of valuable scientific data about the ocean ecosystem, and the training of the scientists and managers of the future.

It is the belief of the Society that knowledge gained about our environment, coupled with the education of students and scientists, will provide a sound, balanced approach to industrial development of all our natural resources. An increased understanding of the ocean ecosystem will allow all of us to act more responsibly as we affect that system.

Such a grant would be consistent with Atlantic Richfield Company's continuing commitment to encourage and support — with technical ability, time and money — environmental programs and research efforts sponsored by organizations such as O.R.E.S., who are seeking solutions to technological and ecological problems. Support, in these areas, helps to insure a sound, balanced environmental policy, as the development of natural resources occurs.



SEP. 6. 1984

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MICHAEL KERSGAARD
POUL HARTVIG NIELSEN
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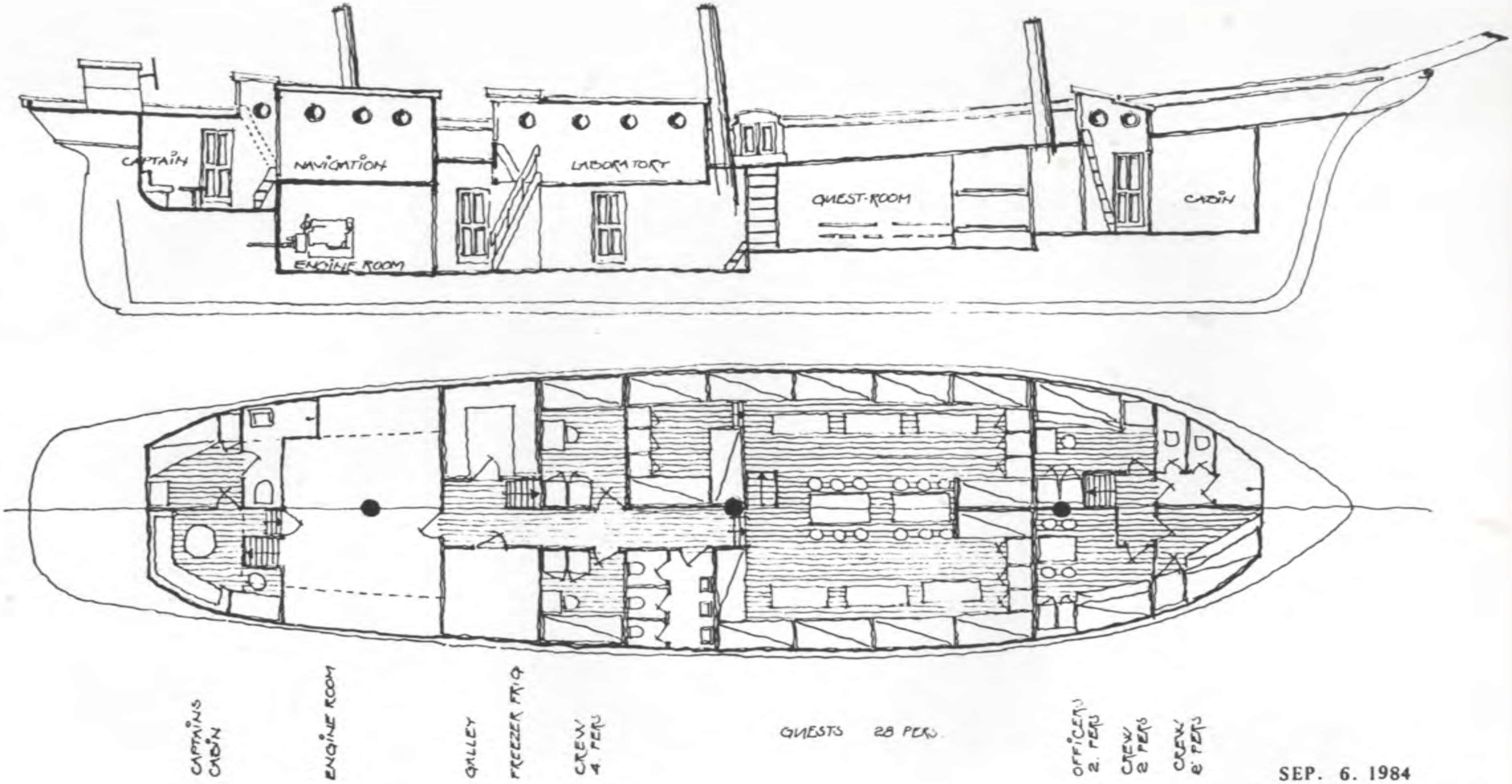

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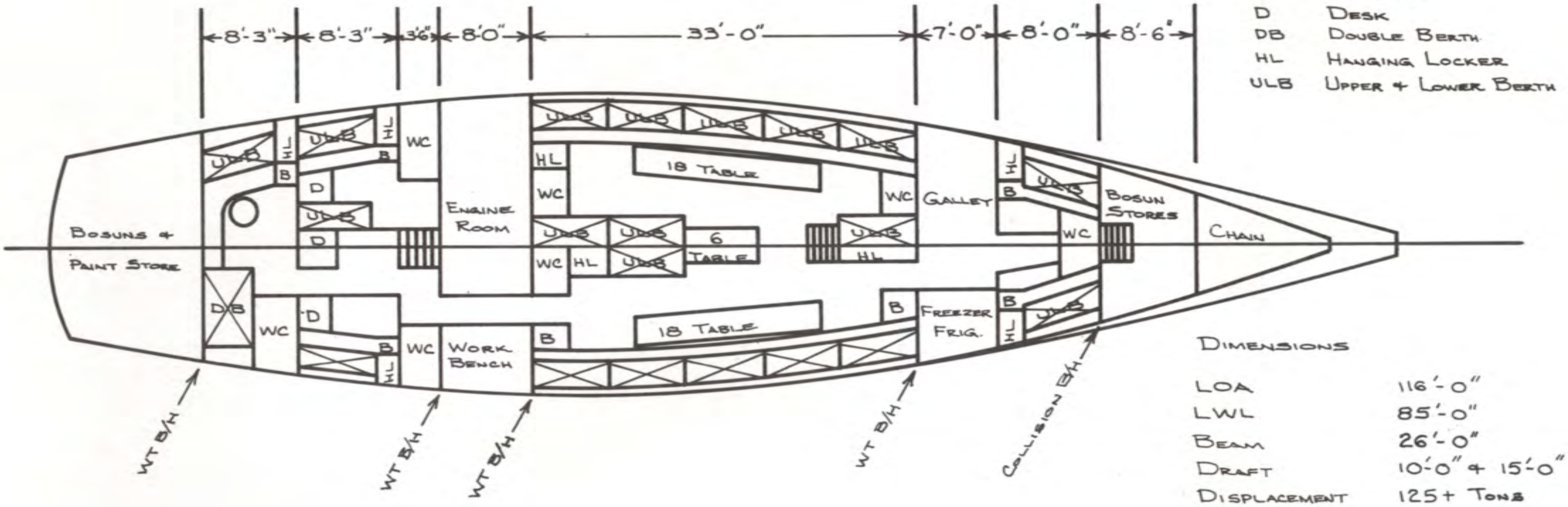

B	Bureau
D	Desk
DB	Double Berth
HL	Hanging Locker
ULB	Upper & Lower Berth

Dimensions

LOA	116'-0"
LWL	85'-0"
Beam	26'-0"
Draft	10'-0" & 15'-0"
Displacement	125+ Tons
Rig & Sail Area	3 Masted Staysail Schooner 5,000 FT^2 +

OCEANOGRAPHIC RESEARCH AND TEACHING VESSEL

Purpose

In keeping with the purpose of the Ocean Research and Education Society, the new vessel should be a fully equipped research vessel, of traditional sailing vessel design, and be capable of housing 38-40 people. Given the purpose, function, and goals of the Society, the following criteria for design were developed:

Size:

Length	110 feet, on deck 90 feet, on water line
Beam	25 feet
Draft	11 feet, board up 16 feet, centerboards down
Gross Tons	100
Deadweight Tons	+/- 400

Construction:

The vessel is to be a traditional style, 3 masted square tops'l schooner. Vessel should be constructed of steel in compliance with American Bureau of Shipping standards for ocean going auxiliary sailing vessels. Watertight bulkheads, stability, etc. should be according to S.O.L.A.S. (Safety of Life at Sea) Convention and U.S. Coast Guard sub-chapter T Rules. Vessel should conform to the 100 gross ton limit. Watertight doors should be fitted in all watertight bulkheads except collision bulkhead for convenient access from one compartment to the next.

The main engine should have sufficient power for cruising at 9 knots in smooth water. Two engines and propellers are preferred for ease of maneuvering.

Auxiliaries include two 15-20 KW 220V AC 60Hz 3 phase; 110V AC 60Hz main power supply. A 24 volt battery bank is required for silent operations, chargeable by either generator. Separate batteries, 12 or 24 volt, are required for radios as per SOLAS rules.

Hydraulic motors to provide power for the anchor windlass, oceanographic winches, and a small winch aft for docking.

A 250 gallon per day (minimum) watermaker, and hot and cold running fresh water in all restroom facilities, galley and lab should be included.

The heating system should provide heating for the whole vessel.

Fuel tanks should be adequate for 3000 miles at cruising speed. Water tanks should have the capacity to hold 1500 gallons. Outboard motor fuel tankage should provide 100 gallon capacity.

Style and Performance:

The vessel should be good looking, capable of good windward performance, and be able to stay at sea for prolonged periods (35 days) in all weather. It needs to be roomy, comfortable, and capable of reasonable speed under sail and power. Ocean racer performance is not required but the ability to make long passages under sail even in light weather is needed. The ship should have an open unobstructed deck, with full bulwarks for safety.

Accomodations:

Bunks for 38-40 people should be provided. Accommodations should include two double cabins for scientists sharing a private toilet, one double cabin for two mates, one double cabin for two cooks, one double cabin to accomodate one engineer and one chief officer. These three double cabins can share a toilet. Cabin for engineer and chief officer should include small desks and file cabinets. Accommodations for the Captain should include a double berth, two single berths, private toilet and an office or day cabin easily accessible to the navigation room and wheel. A sea berth for the Captain near the chart room would be desireable. The rest of the bunks can be pilot berths, each to be equipped with storage bin, individual light, small bookcase and curtains for privacy. These can all be distributed around a single large open main cabin lit by skylights containing mess tables for the entire ship's company.

A blackboard facility, projection screen, etc. should be provided since it will also double as a classroom when required.

The galley should be immediately adjacent to this living area with sufficient capacity for dry stores and frozen meats for a minimum of six weeks. A 20 cubic foot refrigerator and 40 cubic foot deep freeze (top opening) should be adequate for these needs.

Each toilet facility should be equipped with a small sink, shower and toilet.

Laboratory should be approximately 12-15 feet by 18 feet, and be located on deck, as a deck house or slightly sunk into the deck. It needs both standing and sitting height lab benches, sinks (two) with water—hot and cold—bookcases, file cabinets and should have easily accessible storage for oceanographic gear. A small darkroom should be included, and have immediate access to open decks.

The chart room on deck should be located aft, accessible to wheel and engine controls and Captain's accomodation. It should contain a chart table, chart book, and instrument storage, navigating electronics and second chart area for student navigators.

Wheel should be aft in the open. Engine controls, speed and depth read outs should be located nearby.

General

Storage areas will be required for oceanographic equipment, sails, outboards, flammables (paints, solvents, etc.), bosun's supplies and engine room spares.

Cost Estimates

Hull, Engine, auxiliaries and sails—built in Denmark		**$950,000**
Life Saving Gear:	four 20-man life rafts	**25,000**
	four Emergency Position Indicating Radio Beacons	**1,000**
	self activating flares	**1,000**
Small Boats:		**12,000**

Navigation and Communication Equipment:

Radar:	Furuno (small)	**2,700**
	Furuno 711	**6,995**
Radios:	2 Stevens Engineering SSB	**16,000**
	2 VHF	**900**
	4 hand held portable radios	**1,000**
Sounders:	Furuno Recording to 2000 fm.	**3,500**
	Furuno Color-Chromoscope	**3,000**
	Furuno Side Scan Sonar	**14,000**
Navigators:	Loran C	**4,000**
	Satellite Navigator	**3,000**
	Wind Speed Meter	**1,000**
	Hull Speed Meter	**1,000**
	Electronic Compass	**1,000**
	Weather Fax Recorder	**14,000**
Research Gear:	Surface Temperature Sensors	**500**
	Directional Hydrophones	**5,000**

Miscellaneous Equipment:

Hydro Winches:	3/16 wire-2000 meter level winder	6,500
	One wire-2 conductors, 2000 meter level winder	12,000
	2 meter wheels	2,000
Articulated Arm Crane:		
	Hydraulic, 20 foot reach	12,000
"A" Frames:		3,000

OCEANOGRAPHIC RESEARCH AND TEACHING VESSEL TOTALS

Hull, Engine, Auxiliaries and sails: (Denmark)	$950,000
Navigation and Communications Equipment	66,595
Lifesaving gear	27,000
Small Boats	12,000
Miscellaneous Equipment	33,500
Net Cost	$1,091,095
O.R.E.S. Expenses	30,000
Subtotal	$1,121,095
Contingency at 15%	168,164
Total Project Cost	$1,289,259

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Dr. Paul J. Godfrey, University of Massachusetts

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Dr. Anthony Martin, Sea Mammals Unit, British Antarctic Survey

Dr. Charles Mayo, Provincetown Center for Coastal Studies

Ms. Carol Price, University of Rhode Island

Mr. Gregory Stone, New England Aquarium

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*Resigned in 1983.